

CLAIMS

1. A method of scheduling communications, comprising:
 - selecting first and second terminal pairs, the first terminal pair having a first transmitting terminal and a first receiving terminal, and the second terminal pair having a second transmitting terminal and a second receiving terminal;
 - scheduling a first signal transmission from the first transmitting terminal to an intermediate terminal, the first signal transmission being destined for the first receiving terminal;
 - scheduling, simultaneously with the first signal transmission, a second signal transmission from the second transmitting terminal to the second receiving terminal; and
 - scheduling a power level for each of the first and second signal transmissions that satisfies a target quality parameter for each of the intermediate terminal and the second receiving terminal.
2. The method of claim 1 wherein the scheduling of the first signal transmission further comprises determining that a direct signal transmission from the first transmitting terminal to the first receiving terminal simultaneously with the second signal transmission does not satisfy both a target quality parameter for the first receiving terminal and the target quality parameter for the second receiving terminal.
3. The method of claim 2 wherein the determination that the direct signal transmission from the first transmitting terminal to the first receiving terminal, simultaneously with the second signal transmission, does not satisfy the target quality parameters for each of the first and second receiving terminals comprises attempting to compute a power level for each of the direct signal transmission from the first transmitting terminal to the first receiving terminal and the second signal transmission that satisfies the target quality parameter for each of the first and second receiving terminals.
4. The method of claim 2 wherein the determination that the direct signal transmission between the first transmitting terminal and the first receiving terminal, simultaneously with the second signal transmission, does not satisfy the target quality parameters for each of the first and second receiving terminals is a function of the distance between the first

transmitting terminal and the first receiving terminal and the distance between the first transmitting terminal and the second receiving terminal.

5. The method of claim 2 wherein the determination that the direct signal transmission from the first transmitting terminal to the first receiving terminal, simultaneously with the second signal transmission, does not satisfy the target quality parameters for each of the first and second receiving terminals is a function of path loss information between the first transmitting terminal and the first receiving terminal and path loss information between the first transmitting terminal and the second receiving terminal.

6. The method of claim 5 wherein the first and second terminal pairs are selected from a piconet of terminals.

7. The method of claim 6 further comprising constructing a piconet topology map, and wherein at least a portion of the path loss information is derived from the piconet topology map.

8. The method of claim 1 further comprising selecting a third terminal pair having a third transmitting terminal and a third receiving terminal, and scheduling a third signal transmission therebetween simultaneously with a retransmission of the first signal transmission from the intermediate terminal to the first receiving terminal.

9. The method of claim 8 further comprising scheduling a power level for each of the retransmission of the first signal transmission and the third signal transmission that satisfies a target quality parameter for each of the first and third receiving terminals.

10. The method of claim 1 further comprising scheduling a different spreading code for each of the first and second signal transmissions.

11. The method of claim 1 wherein the parameter comprises a carrier-to-interference ratio.

12. The method of claim 1 further comprising transmitting the first signal transmission from the first transmitting terminal to the intermediate terminal simultaneously with

transmitting the second signal transmission from the second transmitting terminal to the second receiving terminal.

13. A communications terminal, comprising:

a scheduler configured to select first and second terminal pairs, the first terminal pair having a first transmitting terminal and a first receiving terminal, and the second terminal pair having a second transmitting terminal and a second receiving terminal, the scheduler being further configured to schedule a first signal transmission from the first transmitting terminal to an intermediate terminal, the first signal transmission being destined for the first receiving terminal, schedule, simultaneously with the first signal transmission, a second signal transmission from the second transmitting terminal to the second receiving terminal, and schedule a power level for each of the first and second signal transmissions that satisfies a target quality parameter for each of the intermediate terminal and the second receiving terminal.

14. The communications terminal of claim 12 wherein the scheduler is further configured to schedule the first signal transmission if a direct signal transmission from the first transmitting terminal to the first receiving terminal, simultaneously with the second signal transmission, does not satisfy both a target quality parameter for the first receiving terminal and the target quality parameter for the second receiving terminal.

15. The communications terminal of claim 13 wherein the scheduler is further configured to determine that the direct signal transmission from the first transmitting terminal to the first receiving terminal, simultaneously with the second signal transmission, does not satisfy the target quality parameters for each of the first and second receiving terminals by attempting to compute a power level for each of the direct signal transmission from the first transmitting terminal to the first receiving terminal and the second signal transmission that satisfies the target quality parameter for each of the first and second receiving terminals.

16. The communications terminal of claim 13 wherein the scheduler is further configured to determine that the direct signal transmission between the first transmitting terminal and the first receiving terminal, simultaneously with the second signal transmission, does not satisfy the target quality parameters for each of the first and second receiving terminals as a

function of the distance between the first transmitting terminal and the first receiving terminal and the distance between the first transmitting terminal and the second receiving terminal.

17. The communications terminal of claim 13 wherein the scheduler is further configured to determine that the direct signal transmission from the first transmitting terminal to the first receiving terminal, simultaneously with the second signal transmission, does not satisfy the target quality parameters for each of the first and second receiving terminals as a function of path loss information between the first transmitting terminal and the first receiving terminal and path loss information between the first transmitting terminal and the second receiving terminal.

18. The communications terminal of claim 17 wherein the scheduler is further configured to select the first and second terminal pairs from a piconet of terminals.

19. The communications terminal of claim 18 wherein the scheduler is further configured to construct a piconet topology map, and derive at least a portion of the path loss information from the piconet topology map.

20. The communications terminal of claim 13 wherein the scheduler is further configured to select a third terminal pair having a third transmitting terminal and a third receiving terminal, and schedule a third signal transmission therebetween simultaneously with a retransmission of the first signal transmission from the intermediate terminal to the first receiving terminal.

21. The communications terminal of claim 20 wherein the scheduler is further configured to schedule a power level for each of the retransmission of the first signal transmission and the third signal transmission that satisfies a target quality parameter for each of the first and third receiving terminals.

22. The communications terminal of claim 13 wherein the scheduler is further configured to schedule a different spreading code for each of the first and second signal transmissions.

23. The communications terminal of claim 13 wherein the parameter comprises a carrier-to-interference ratio.

24. The communications terminal of claim 13 further comprising a receiver configured to receive communications from a plurality of terminals and a transmitter configured to transmit communications to the plurality of terminals, the scheduler being communicatively coupled to the receiver and transmitter.

25. The communications terminal of claim 24 further comprising a receiving signal processor configured to despread communications between the receiver and the scheduler, and a transmitting signal processor configured to spread communications between the scheduler and the transmitter.

26. The communications terminal of claim 24 further comprising a plurality of user interfaces communicatively coupled to the receiver and transmitter.

27. The communications terminal of claim 26 further comprising a receiving signal processor configured to despread communications between the receiver and a first one of the user interfaces, and a transmitting signal processor configured to spread communications between a second one of the user interfaces and the transmitter.

28. A communications terminal, comprising:
means for selecting first and second terminal pairs, the first terminal pair having a first transmitting terminal and a first receiving terminal, and the second terminal pair having a second transmitting terminal and a second receiving terminal;
means for scheduling a first signal transmission from the first transmitting terminal to an intermediate terminal, the first signal transmission being destined for the first receiving terminal;

means for scheduling, simultaneously with the first signal transmission, a second signal transmission from the second transmitting terminal to the second receiving terminal; and

means for scheduling a power level for each of the first and second signal transmissions that satisfies a target quality parameter for each of the intermediate terminal and the second receiving terminal.

29. The communications terminal of claim 28 wherein the means for scheduling the first signal transmission includes means for determining that a direct signal transmission from the first transmitting terminal to the first receiving terminal simultaneously with the second signal transmission does not satisfy both a target quality parameter for the first receiving terminal and the target quality parameter for the second receiving terminal.

30. The communications terminal of claim 28 further comprising means for scheduling a different spreading code for each of the first and second signal transmissions.

31. Computer readable media embodying a program of instructions executable by a computer program to perform a method of scheduling communications, the method comprising:

selecting first and second terminal pairs, the first terminal pair having a first transmitting terminal and a first receiving terminal, and the second terminal pair having a second transmitting terminal and a second receiving terminal;

scheduling a first signal transmission from the first transmitting terminal to an intermediate terminal, the first signal transmission being destined for the first receiving terminal;

scheduling, simultaneously with the first signal transmission, a second signal transmission from the second transmitting terminal to the second receiving terminal; and

scheduling a power level for each of the first and second signal transmissions that satisfies a target quality parameter for each of the intermediate terminal and the second receiving terminal.

32. The computer readable media of claim 31 wherein the scheduling of the first signal transmission further comprises determining that a direct signal transmission from the first transmitting terminal to the first receiving terminal simultaneously with the second signal transmission does not satisfy both a target quality parameter for the first receiving terminal and the target quality parameter for the second receiving terminal.

33. The computer readable media of claim 31 wherein the method further comprises scheduling a different spreading code for each of the first and second signal transmissions.